COOK INLET AREA GROUNDFISH REPORT TO THE ALASKA BOARD OF FISHERIES 2001

by

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INTRODUCTION

Proposal #9. Delete or amend language "Groundfish may be taken at any time".

Proposal #10. Require all retained catch to be reported on fish tickets.

The Cook Inlet Area (Figure 1), which includes territorial waters lying west of Cape Fairfield (148º 50.25' W. long.) and north of the latitude of Cape Douglas (58º 51.10' N. lat.), is divided into the Cook Inlet and North Gulf Districts. The Cook Inlet District includes waters of Cook Inlet north of a line from Cape Douglas to Point Adam (59º 15.27' N. lat.) and the North Gulf District comprises the remaining waters of the management area.

The Alaska Department of Fish and Game (ADF&G) manages all commercial groundfish fisheries within the Cook Inlet Area. Under state regulations, groundfish are defined as any marine finfish except halibut, osmerids, herring, and salmonids. Directed fisheries occur for several commercially important groundfish including (Table 1): sablefish, Pacific cod, walleye pollock, lingcod, and numerous species of rockfish. State groundfish regulations also accommodate incidental bycatch from non-target fisheries, such as Pacific halibut. Some species landed as bycatch to directed groundfish fisheries include: spiny dogfish, Pacific sleeper shark, Pacific salmon shark, majestic squid, giant Pacific octopus, and various species of skates. Few flatfish landings have occurred, although numerous species of flatfish comprise a significant portion of the groundfish biomass within Central Region waters (Bechtol 2001; Gustafson and Bechtol 2001). Unlike other fisheries that the state manages out to the 3 nautical mile boundary, ADF&G management of both directed and incidental harvests of lingcod and black rockfish extends into adjacent federal waters of the exclusive economic zone (EEZ). Commercial groundfish harvests are monitored inseason through ADF&G fish tickets and processor reports. Unfortunately, regulatory reporting requirements are vague for groundfish retained but not delivered for sale, such as catch that is retained for personal use or catch that is used as bait at sea. One of the most assured means of improving fisheries management is through complete and accurate documentation of fisheries mortality, particularly reporting of all harvest removals.

Legal gear types for groundfish fishing in the Cook Inlet Area are longline, pelagic trawl, hand troll, mechanical jig, and pots. In most area fisheries where more than one gear type is legal, only one gear type may be aboard at a time. Fishermen operating groundfish gear or groundfish tenders in Cook Inlet Area waters must have an area registration prior to fishing or tendering. Other area-wide regulations include a 24-hour delivery period following the closure of a directed fishery and a prohibition to non-pelagic trawl gear. Some open groundfish seasons are established in regulation 5 AAC 28.310 FISHING SEASONS FOR COOK INLET AREA. For many species, season openings are specified in regulation as calendar dates with season closures set by emergency order (Table 2). For Pacific cod, the parallel and state waters seasons established in regulation 5 AAC 28.367 are opened by emergency order contingent upon management actions for the Pacific cod fishery in the federal Central Gulf of Alaska. For a miscellaneous groundfish species that is not identified in regulation, the fishing season is established as a provision of the miscellaneous groundfish permit (regulation 5 AAC 28.379).

This report summarizes annual harvests, in pounds (lb) converted to round weight equivalents, and exvessel values for a variety of commercial groundfish fisheries during 1988-2001 (Trowbridge 1998; Table 3). Some of the more important groundfish fisheries are discussed in specific sections of this report. In addition, commercial groundfish proposals that have been submitted for consideration by the Alaska Board of Fisheries (BOF) are listed within the report sections most closely affected by the proposed changes.

SABLEFISH

Historic Background

Districts in the Cook Inlet Area are managed as a single unit for the sablefish fishery. Harvests since 1988 ranged from 2,996 lb in 1989 to 136,252 lb in 1988 (Table 4). Effort in the fishery has ranged from 4 to 79 vessels. Since 1988, the North Gulf District has yielded the majority of sablefish harvests; annual harvests from the Cook Inlet District rarely exceeded 2,000 lb.

The Cook Inlet Area sablefish fishery historically opened and closed on dates concurrent with the sablefish season in adjacent federal waters. Following implementation of the federal Individual Fishing Quota (IFQ) program in 1995, the Cook Inlet sablefish fishery became one of only two open-access sablefish fisheries in the state. Beginning in 1995, the Cook Inlet fishery opened with the IFQ fishery on March 15 and closed by emergency order when the guideline harvest level (GHL) was achieved. The BOF subsequently changed the open date of the sablefish season to July 15, first effective in 2000. The fishery GHL, first set in 1997 as the recent five-year average harvest of 104,000 lb, has been adjusted each year by the percentage annual change in sablefish total allowable catch (TAC) set by the North Pacific Fishery Management Council (NPFMC) for federal waters of the Central Gulf of Alaska. The TAC is based on biomass estimates generated from annual surveys conducted by the National Marine Fisheries Service in the Gulf of Alaska. In recent years, biomass estimates, and the corresponding TAC, have declined relative to the mid-1990s (Sigler et al. 2000). Because sablefish in the Cook Inlet Area are believed to be part of the Gulf of Alaska stock, adjusting the state GHL proportional to changes in the federal TAC was both reasonable and conservative.

Historic sablefish catch in the North Gulf District has varied widely. Potential causes of this annual variability include shifts in sablefish availability due to: environmental conditions or stock recruitment; shifts in fishery effort due to factors such as weather, market conditions, and alternative fishing opportunities; or misreporting of catch. From 1988 to 1999, the majority of the harvest occurred during the months of May and June. Since 1995, the pace of the Cook Inlet Area sablefish fishery increased, trending toward shorter seasons each year. For example, season durations for 1996 to 1998 were 169 days, 134 days, and 35 days, respectively. The 2000 sablefish fishery lasted 11 days, although it is less comparable due to the season opening date change. Sablefish may not be retained from Cook Inlet state waters when the state managed fishery is closed.

Federal and state regulations allow a sablefish IFQ holder to participate in the state managed sablefish fishery, provided the vessel catch does not exceed IFQ shares and the permit holders comply with both federal IFQ and state regulations. Similarly, individuals with halibut IFQ may participate in the state managed sablefish fishery or retain sablefish as bycatch during the open sablefish season.

The department has started fishery-independent longline surveys to assess sablefish stock status in the North Gulf District. Specific study sites included Resurrection Bay and Aialik Bay in 1999 and Nuka Bay in 2000. Study results will be used to describe and compare trends in relative catch, size, age, and distribution of species caught by longline gear in sablefish habitat in these waters (Table 5).

2001 Season Summary and Outlook

The 2001 Cook Inlet Area sablefish fishery opened July 15 with a 67,000-lb fishery GHL. Catch was monitored via fish tickets and frequent contacts with fish buyers. An emergency order closure was announced on July 19, when reported harvest reached 27,500 lb. When the fishery closed on July 21, two days later, the catch totaled 132,593 lb from 33 landings by 21 vessels (Table 4). The large 2001 fishery harvest was attributed to increased catch rates and changes in fishing patterns. Greater catch rates may reflect recruitment of the above-average 1997 and 1998 year classes in the Gulf of Alaska (Sigler et al. 2000). No sablefish were landed from the Cook Inlet District in 2001. Most vessels in the 2001 Cook Inlet sablefish fishery delivered headed and gutted fish with reduced value for biological sampling. However, department sampling of two deliveries to Seward yielded approximately 180 biological samples for length, weight, sex, maturity, and age.

The 2002 Cook Inlet Area sablefish fishery will open July 15 with an anticipated season GHL of 67,000 lb. Effort in the fishery is expected to remain high and the department will likely set weekly fishing periods of 48-72 hours duration in order to manage for the GHL. Catch sampling will be conducted as opportunity permits.

ROCKFISH

Proposal 8: Change the directed rockfish open season date to April 1.

Historic background

Within the Cook Inlet Area, the North Gulf District has historically yielded more than 95% of the commercial rockfish catch during any year and also supported active sport and personal use rockfish fisheries. The rocky, high-relief habitat typical of the North Gulf District is more

suitable to nearshore rockfish than the glacial-mud substrate of the Cook Inlet District. Since 1988, area catch ranged from 30,580 lb by 31 vessels in 1990 to 501,679 lb by 121 vessels in 1995 (Table 6). Pelagic shelf rockfish, particularly black rockfish taken primarily by jig gear, have comprised over 50% of the total harvest in most years (Bechtol 1998; Figure 2). Yelloweye rockfish primarily harvested by longline gear have been the second most dominant species and averaged 22% of the total annual catch since 1992.

Rockfish are managed via the Cook Inlet Rockfish Management Plan (5 AAC 28.365), first implemented in 1993. From 1993 to 1996, rockfish opened to directed fishing January 1, closed when the 150,000-lb GHL was attained, and reopened as a bycatch-only fishery for the balance of the year. In 1996, due to bycatch harvests that approached directed fishery removals in some years, coupled with a lack of stock abundance information, the BOF adopted a more conservative approach by making the 150,000-lb GHL a harvest cap rather than a trigger for opening the bycatch fishery. Management under the harvest cap approach, initiated in 1997, proved problematic, as it required the department to anticipate the rockfish bycatch needed for other directed fisheries such as halibut and Pacific cod. In 1998, the NPFMC amended the pelagic rockfish assemblage, as defined in the federal Gulf of Alaska Fishery Management Plan, by removing black and blue rockfishes. This action effectively transferred management responsibility for these species in federal waters to the state. Although blue rockfish have not been reported in the Cook Inlet Area, black rockfish is a pelagic species commonly found in the North Gulf District. Also in 1998, the BOF established a directed rockfish season opening date of July 1 and restricted gear for rockfish to mechanical jig or hand troll. These measures were adopted to focus the directed fishery on black rockfish, rather than yelloweye rockfish that are more susceptible to overfishing. The season opening date of July 1 also facilitated management by deferring the directed rockfish fishery until many of the non-rockfish fisheries have been closed for the year. This date also sets the directed fishing seasons for both rockfish and lingcod to open concurrently. Because the directed rockfish and lingcod fisheries are both restricted to jig gears and both fisheries have a substantial bycatch of the other species, bycatch and discards are somewhat reduced. Other regulatory components of the rockfish management plan include:

- a five-day trip limit of 1,000 lb for Cook Inlet District, and 4,000 lb for the North Gulf District;
- a 150,000-lb annual harvest level for all the fishery removals; and
- a 20% bycatch limit after the directed fishery closes, providing the above trip limits are not exceeded.

2001 Season Summary and Outlook

The 2001 rockfish harvest from the Cook Inlet Area through September was 114,130 lb from 151 landings by 73 vessels. The directed season opened July 1 and closed by emergency order on August 29 when the reported harvest reached 94,257 lb. After the closure, rockfish could only be retained at allowed specified bycatch levels. Black rockfish, taken primarily by jig gears, comprised 72% (82,124 lb) of the total harvest, followed by yelloweye rockfish at 21% (23,963 lb) of the total. In contrast to most years, the majority of yelloweye rockfish were taken by jig gear during the directed fishery rather than as bycatch to directed Pacific cod, sablefish, and

halibut longline fisheries. Other species comprising the balance of the rockfish harvest included rougheye, shortraker, thornyhead, quillback, yellowtail, silvergray, and dusky rockfishes.

The department sampled 636 rockfish at the ports of Homer and Seward during the commercial fishery. Fish were sampled for length, weight, sex, maturity, and age composition. Species composition was 69% black rockfish, 15% rougheye rockfish, and 5% yelloweye rockfish. Other species sampled included dusky rockfish, thornyhead, silvergray, shortraker, quillback, and yellowtail rockfishes.

Also in 2001, the department began a research project to assess black rockfish populations at selected locations within the North Gulf District. The goal of this study is to develop an *in situ* assessment approach to estimate abundance of black rockfish and associated species in nearshore waters of Southcentral Alaska. The 2001 field season involved two 10-day charters. During the first charter, fish populations were explored along the Outer Kenai Peninsula at Harris Bay, Nuka Bay, Windy Bay, and Rocky Bay, and East Chugach Island. Methods during this charter involved (1) using sonar to locate fish aggregations; (2) tagging rockfish caught by jig gear from the surface; and (3) using scuba gear to swim underwater transects and count tagged and untagged fish. A second charter focused on fish at systematically selected sites in Harris Bay. Methods during the second charter involved: (1) tagging rockfish caught by jig gear from the surface; and (2) using scuba gear to swim underwater transects and count tagged and untagged fish. Preliminary results from the first field season of this three-year project suggest this is a reasonable approach for black rockfish assessment, although project analyses are still underway.

The 2002 bycatch fishery for rockfish will open January 1 with a bycatch limit ranging from 5% to 20%, depending upon target fishery. The directed rockfish fishery will open by regulation on July 1 and close when the total catch is between 115,000 and 125,000 lb. The balance, up to the 150,000-lb harvest cap, will provide for anticipated rockfish bycatch from other directed fisheries. The department is concerned about the increase in yelloweye rockfish harvest during the directed fishery. If this trend continues, the department may need to address this concern through the board process.

LINGCOD

Proposal 8: Change the directed rockfish open season date to April 1.

Historic background

Since 1988, Cook Inlet Area lingcod harvests ranged from 2,894 lb in 1989 to 87,370 lb in 1993 (Table 7). Effort ranged from 10 vessels in 1989 to 84 vessels in 1992. The North Gulf District, which supports active commercial and recreational fisheries, has historically accounted for virtually all of the harvest. Lingcod harvest from the Cook Inlet District has been negligible,

totaling only 1,295 lb since 1988. Harvest differences between districts likely reflect the relative amounts of suitable lingcod habitat.

Among all years since 1988, 76% of the lingcod harvest has come from jig gear in directed and bycatch fisheries, 23% came from longline gear, and less than 2% from trawl and pot gears. However, the predominate gear type has varied annually between longline to jig gears. Beginning in 1992, an increasing proportion of the reported lingcod harvest shifted from state waters to adjacent federal waters. This pattern reversed in 1997, after which the harvest from state waters once again predominated. It is unknown whether these shifts indicated a relatively low abundance of legal sized fish in state waters.

Directed fishing for lingcod is restricted to jig gears. Regulatory season dates for the fishery are July 1 to December 31; the closure during the first half of the year protects spawning and nest-guarding lingcod at a time when they are particularly vulnerable to capture (Vincent-Lang and Bechtol 1992). A BOF proposal to change the directed rockfish fishery to April 1 from the current July 1 opening date would likely increase incidental catch and discards of lingcod in this nest-guarding period. Current regulations also include a minimum size requirement of 35 inches overall for lingcod, or 28 inches measured from the front of the dorsal fin to the tip of the tail. The minimum legal size is intended to allow sexually mature lingcod to spawn in at least two successive years prior to being subjected to harvest removal. Lingcod may be retained at a 20% bycatch level during the open season. However, because survival of released fish is relatively high, lingcod may not be retained as bycatch during closed seasons. Resurrection Bay has been closed to lingcod fishing since 1993 to protect depressed lingcod resources.

Area closures, season opening dates, and size restrictions are similar for commercial and recreational lingcod fisheries. Recreational lingcod harvests in Cook Inlet Area waters have ranged from 73,880 lb in 1995 to 160,950 lb in 2000 (Table 7).

The commercial lingcod fishery is managed for a 35,000-lb GHL that was established in 1997 as 50% of the recent 5-year harvest. The department adopted this approach due to a lack of lingcod abundance and biomass estimates, and due to concern over localized recruitment failures, particularly in Resurrection Bay, during the early 1990s. Interest in the directed lingcod fishery has been sporadic in recent years. For example, the fishery was open through the entire July 1 – December 31 regulatory season during 1999, but closed on August 30 in 2000.

2001 Season Summary and Outlook

The 2001 directed and bycatch lingcod fisheries opened July 1 with a 35,000-lb GHL. Lingcod harvest from Cook Inlet Area through September totaled 25,353 lb from 65 landings by 30 vessels. Jig gear produced 71% and longline gear yielded 31% of the current 2001 harvest. The fishery will close on October 22 in anticipation of the GHL being attained.

To date, department biologists have sampled 188 lingcod from commercial landings to the ports of Seward and Homer. Because lingcod are generally delivered gutted, collection of meaningful weight and sexual maturity data was limited, although external determination of sex was possible

on some fish. Age structures in the form of otoliths, dorsal fin rays, or both, were collected from 127 fish for future determination of age and growth rates.

The 2002 fishery will open July 1. The department plans to set the Cook Inlet Area lingcod GHL at 52,500 lb, or 75% of the average harvest during 1992-1996. This is an increase from the previous GHL, but is more consistent with the approach applied by groundfish plan teams and the NPFMC for groundfish stocks in federal waters. Under Amendment 56 adopted by the NPFMC for the Bering Sea/Aleutian Fishery Management Plan, a fishery is classified as a Tier 6 fishery if the only reliable assessment data is catch history. For a Tier 6 fishery, allowable biological catch (ABC) is defined as 75% of the historical annual average harvest. An increase of the commercial lingcod GHL is not anticipated to result in increased user group conflicts or to be detrimental to the lingcod resource. Based on past fishery performance, the 2002 season might be expected to close sometime during late October or early November. However, it is difficult to predict performance in the 2002 season given inconsistent fishery effort in recent years. The department will continue opportunistic sampling of lingcod landings.

PACIFIC COD

Proposal #11: Change the northern boundary description for the Kachemak Bay pot closure area from a fathom curve to a latitude/longitude coordinates.

Proposal #12: Open a portion of the Kachemak Bay pot closure area.

Proposal #13: Establish seasonal groundfish pot closures in and around Seldovia Bay and Port Graham.

Historic background

Pacific cod fisheries in the Cook Inlet Area are managed under the Cook Inlet Pacific Cod Management Plan (5 AAC 28.367). The plan defines two seasons, a "parallel season" and a "state waters season." The parallel season is set by emergency order to coincide with the federal fishery for Pacific cod in the Central Gulf of Alaska Regulatory Area with respect to: (1) the opening date of the initial federal season; and (2) allowable gears, to the extent that those gears are also legal in state waters. Subsequent parallel seasons may open if the GHL for the state waters season has been achieved. The state waters season, established by the BOF in 1996 and first implemented in April 1997, was designed to provide additional fishing opportunities for local vessels fishing with pot or jig gear.

Elements of the state waters season include:

- season opens by emergency order 24-hours following the closure of the initial federal season in the Central Gulf of Alaska area by NMFS;

- exclusive area registration; stipulates a vessel may not validly register for more than one exclusive Pacific cod registration area during a state managed season;
- GHL calculated as 2.25% of the Central Gulf of Alaska allowable biological catch (Thompson et al. 2000) and allocated equally between pot and jig gear;
- pot gear closure from May 1 to June 15;
- gear limits of 5 jigs or 60 pots with a pot buoy tag requirement;
- allowance of full retention of pollock; and
- when the directed rockfish fishery is closed, rockfish bycatch is reduced to 5% for vessel registered for the state Pacific cod season.

The plan allows gear limits and the exclusive area registration requirement to be relaxed after October 30 if it appears that the state managed GHL will not be achieved.

Statewide regulations for groundfish pots specify a tunnel eye perimeter of 36 inches or less and a biodegradable escape panel in the pot wall. Area regulations specify partial area closures to fishing with groundfish pot gear in the Kamishak Bay and Kachemak Bay portions of the area to protect depressed king crab stocks and rebuilding Tanner crab stocks. Limited onboard observer coverage of vessels using pot gear suggests the closure areas achieve the goal of protecting critical crab habitat. ADF&G staff remain concerned that closure area changes do not incrementally erode the effectiveness of the pot closure areas for protecting crab stocks.

Since 1988, annual catch in the Cook Inlet Area parallel Pacific cod fishery ranged from 36,846 lb taken by 9 vessels in 1989 to 5.4 million lb taken by 188 vessels in 1992 (Table 8). The parallel season harvest first exceeded 1.0 million lb in 1991 and averaged 3.3 million lb annually during 1991-2000 (Figure 3). Historically the majority of the catch was harvested from the North Gulf District by longline gear. However, the 1990's expansion of the pot fishery shifted the largest component of Pacific cod harvests to the Cook Inlet District where pot gear has taken 20-50% of the parallel season harvest in recent years (Bechtol 1995; Trowbridge 1998).

Harvests from the state waters season for Pacific cod have ranged from 727,278 lb in 1998 to 1.5 million lb in 1999, with most harvests in all years coming from the Cook Inlet District (Table 9). The fishery is restricted to either jig or pot gears and performance by gear type has varied among years (Figure 3). For example, jig gear harvested 67% of the 1997 season total, a year in which pot gear was allowed to fish only four days before the spring pot closure went into effect. Jig catch fell to 26% of the 1998 harvest, and continued to decline to less than 2% of the 2000 total harvest. In 1998, the board adjusted the start of the pot closure period from April 7 to May 1. This provided an additional three weeks to fish pot gear during the spring period. The original April 7 closure date was based on concerns for seasonal product quality that were subsequently unrealized. After the department enacted the new regulation by emergency order in 1999, the fishery harvested 1.5 million lb of a 2.6 million-lb GHL. Despite regulatory adjustments, the state waters season GHL has never been achieved in the Cook Inlet Area (Figure 3).

Total Pacific cod removals, including both parallel and state waters seasons, have ranged from 2.7 million lb in 2000 to 4.7 million lb in 1999 during years in which both fisheries were in effect (Table 9). Fishing with most gear types appears to be most productive from late winter through spring. Although the department has only limited data on spring Pacific cod distributions in the Cook Inlet Area, studies from other areas suggest that cod aggregate in major

spawning areas during January through March, then migrate to shallower, nearshore waters as part of a spring postspawning migration (Shimada and Kimura 1994). Although some interannual variability exists in total Pacific cod removals from Cook Inlet Area waters, these harvest levels are relatively consistent when compared with a general trend in declining Pacific cod biomass in the Gulf of Alaska since 1998 (Thompson et al. 2000).

2001 Season Summary and Outlook

The 2001 Cook Inlet Area parallel Pacific cod season opened January 1 and closed on March 4 by emergency order. The catch and effort of 611,895 lb from 80 vessels was below recent levels (Table 8). However, similar to recent years, pot gear in the Cook Inlet District predominated the catch at 314,098 lb. All but 30,643 lb of the 297,797 lb longline harvest came from the North Gulf District.

The 2001 state managed fishery for Pacific cod opened on March 5 with a 1.9 million-lb GHL divided equally between pot and jig gear. Fishing with pot gear was closed May 1 – June 15, as specified in regulation. The harvest through October 1 was 797,509 lb from 199 landings by 14 vessels (Table 9). Catch and effort by gear type was 778,081 lb from 186 landings by 9 pot vessels and 19,248 lb from 13 landings by 5 jig vessels (Figure 3). Most of the total harvest came from pot gear fishing in the Cook Inlet District. The season is expected to remain open for the balance of the calendar year. On October 30 the department will remove both the gear limit restriction and the exclusive area registration requirement as specified in the Pacific cod management plan.

To date, department staff have sampled 862 Pacific cod at Seward and Homer; samples were obtained from both the Cook Inlet and North Gulf Districts. Length and weight data were collected from all fish. However, sex and maturity determination, as well as removal of otoliths for age and growth rate determination, was not possible for all deliveries because the sale of some fish whole to fresh markets precluded cutting those fish for sampling. Ancillary information on Pacific cod age, sex, size, and distribution is also collected during the annual trawl surveys in Kachemak and Kamishak Bays; survey results are reported under separate titles.

The 2002 Cook Inlet Area parallel season for Pacific cod will open January 1 and coincide with inseason adjustments by NMFS for adjacent federal waters. The state managed season will begin 24 hours after NMFS closes directed fishing for Pacific cod in the Central Gulf Area. When the ABC for the Central Gulf Area has been determined, the department will calculate the GHL and issue a news release outlining the upcoming season. The department plans to continue commercial catch sampling of Pacific cod.

POLLOCK

Walleye pollock seasons in the Cook Inlet Area were historically managed as a parallel fishery with state seasons set to coincide with NMFS actions in the adjacent waters of the federal EEZ. The cumulative pollock harvest from area state waters between 1987 and 1995 was 459,843 lb (Table 10). Directed pollock fisheries using midwater trawls occurred in the North Gulf District during 1996-1999. Annual pollock harvest during these years ranged from 1.9 million lb in 1996 to 9.7 million lb in 1998 with over 99% of the total harvest coming from the directed pelagic trawl fishery. Since early 1999, directed fishing for pollock has required a Miscellaneous Groundfish Permit under 5 AAC 28.379. Due primarily to a lack of interest, no permits have been issued since the permit requirement was adopted. Limited deliveries of pollock also occur under regulation 5 AAC 28.075, which was intended to encourage improved retention and utilization of pollock and Pacific cod, although regulatory compliance is poor. Temporal and geographical fishing restrictions associated with Steller sea lion protective measures complicated pollock harvesting opportunities in 2000 and 2001. These measures are anticipated to continue into the 2002 fishing season.

OTHER GROUNDFISH

Proposal #9. Delete or amend language "Groundfish may be taken at any time".

Proposal #41: Establish directed shark fisheries, permit retention and sale of sharks caught as bycatch to other directed fisheries, and liberalize shark bag limits in the sport fishery.

Historic background

Assorted species of flatfish, skates, sharks, and other groundfish have been harvested in both directed and bycatch fisheries in the Cook Inlet Area (Table 11). Historically, for any groundfish species that lacked specific regulatory management measures, state waters fishing seasons were set by emergency order to coincide with NMFS fishing seasons in adjacent federal waters. However, due to the potential for rapidly expanding and uncontrolled fisheries for species on which there is little biological data, the BOF adopted a variety of regulatory measures allowing the department and the BOF to take a precautionary approach toward new or rapidly developing fisheries.

Among the more pertinent measures adopted by the BOF are:

- 5 AAC 39.210 - Management Plan for High Impact Emerging Fisheries
- 5 AAC 28.083 - Permit Requirements for Skates and Rays
- 5 AAC 28.084 – Fishing Seasons, Landing Requirements, and Utilization for Sharks
- 5 AAC 28.379 - Permit for Miscellaneous Groundfish

Shark harvests from the Cook Inlet Area have ranged from no reported landings in several years to 6,594 lb in 1999. In 1997, the BOF closed sharks to directed fishing and defined that a directed fishery for skates may only occur under the conditions of a commissioner's permit. Little new biological information has become available since the 1997 BOF actions. Department longline surveys in the North Gulf District and Prince William Sound have identified the relative abundance of some shark and skate species caught in the northern Gulf of Alaska waters (Tables 5 and 12). Although either sharks or skates may be retained as bycatch to other open directed fisheries, little retention occurs. Occurrence of these elasmobranch species can approach nuisance levels, such as spiny dogfish in 1998 (Table 12). Catch and discard mortality is poorly documented, but reportedly high among the fishing fleet in some areas. Octopus, which falls under Miscellaneous Shellfish in state regulation, is considered a groundfish species in federal regulation. While directed fishing for octopus never developed in the Central Region, the bycatch of octopus, particularly from the pot fishery for Pacific cod, is significant. Octopus harvests ranged from no reported landings during 1988-1990 to 25,148 lb landed in 1997. The BOF adopted an octopus management plan (5 AAC 38.360), implemented in 2000, which established a bycatch-only fishery with a bycatch limit of 20% and an annual GHL of 35,000 lb. Squid, taken as bycatch to the pollock trawl fishery, is also considered a Miscellaneous Shellfish under state regulation but is reported here as a bycatch component of pelagic trawl fisheries. Squid landings peaked at 26,980 lb in 1998; no landings were reported after 1999.

2001 Season Summary and Outlook

Total 2001 reported harvest of other groundfish in the Cook Inlet Area was 17,070 lb from 79 landings by 12 vessels (Table 11). Octopus, taken primarily as bycatch in the Pacific cod pot fishery, comprised 83% (14,137 lb) of the other species harvest. Skates, landed primarily as bycatch to other directed longline fisheries, totaled 2,709 lb, and less than 100 lb of flatfish were reported landed. No shark landings were reported in 2001, although discussions with the fishing fleet suggest incidental catch of sharks is common in some areas.

The NPFMC is currently reviewing a number of options concerning fishing mortality of miscellaneous groundfish species in federal waters. A Groundfish Plan amendment is being considered that would adopt shark-fishing restrictions for federal waters similar to those adopted by the BOF for state waters. In addition, the NPFMC is considering a Groundfish Plan Team proposal to reapportion the "other species" category into more discrete species groups, and providing each group with a given ABC and TAC. Currently, miscellaneous species are lumped into the "other species" category and managed under an aggregate TAC that is set as a fixed percentage of the aggregate harvest biomass of all species for which TACs have been established. The current risk-prone approach could potentially allow a single species to be harvested up to the TAC established for the "other species" group in aggregate.

AT-SEA DISCARDS

At-sea discards reported by vessels fishing in Cook Inlet Area waters ranged from 0 lb in 1988 to138,170 lb in 1996 (Table 13). Flatfish comprised the largest component, 35%, and skates comprised the second largest component, 32%, of all discards reported during the years 1988-2000. Higher value species such as sablefish, rockfish, and lingcod tended to have lower reported discards. Reporting of at-sea discards is somewhat dependent upon factors such as fishery seasonal timing, changes to fishing technology, market conditions, etc. However, based on relative catch abundances observed in department surveys, actual discard rates are much higher than reported (Tables 5 and 12; Bechtol 2001; Gustafson and Bechtol 2001).

CONCLUSION

Groundfish resources in the Cook Inlet Area represent a wide array of species targeted by commercial, recreational, and subsistence users. Formal management plans or strategies have been adopted for some of the more commercially more important species. However, limited data are available on which to base management decisions for many species with limited or poorly documented historical harvests. In addition, we typically have a poor understanding of the ecological linkages for these species. Thus, management strategies often involve actions that deliberately operate in concert with federal management strategies in adjacent federal waters, particularly when transboundary species are being considered. In this way, the department can take advantage of biological information from adjacent federal waters.

While providing for directed fishing opportunities, it is also important to minimize resource waste by providing for retention of incidentally captured species, particularly when incidental captures are unavoidable and bycatch allowances are sufficiently restrictive to serve as a disincentive to increasing the incidental capture.

Development of new fisheries, or increased harvests for existing species, can be accommodated through existing management plan development guidelines, including miscellaneous fisheries permits. These permits allow exploratory approaches to determine the economic and management viability of resource development without establishing exclusive fishing rights. However, it must be stressed that exploratory approaches place increased demands upon department staff for oversight and management and, in many cases; staff may be unable to commit the necessary resources for development of new fisheries. Furthermore, industry may be called upon to shoulder some of the expenses of project development. Above all, development of new fisheries will be contingent upon adequate biological information. New or expanding harvests that are significantly detrimental to the stock status of target or incidentally caught species will not be approved. For this reason, it is critical that the industry participate as fully as possible in the information gathering process. One important part of this process is the complete and accurate documentation of fishery removals and fishery discards. A common misconception is that a particular removal, such as personal use, is insignificant. However, the cumulative impact of incremental removals can have biological significance on sustained yield management.

In addition, accurate at-sea discard information provides data on relative encounter rates for many species that, while not retained at this time, may become economically important for future fisheries. Although some species of concern, such as sharks, have been discarded at sea by the industry for many years, the lack of documentation on relative encounter rates has impeded development of management strategies to provide for sustained yield. Resource management will continue to rely heavily on input from all user groups, and an increasing understanding and awareness of ecosystem impacts as a component of resource removal.

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Table 1. Some species encountered in Central Region groundfish management.

ADF&G Species Code	Common Name	Scientific Name
710	Sablefish	*Anoplopoma fimbria*
110	Pacific Cod	*Gadus macrocephalus*
270	Walleye Pollock	*Theragra chalcogramma*
130	Lingcod	*Ophiodon elongatus*
870	Giant Pacific Octopus	*Octopus dofleini*
875	Majestic Squid	*Berryteuthis magister*
692	Pacific Sleeper Shark	*Somniosus pacificus*
690	Pacific Salmon Shark	*Lamna ditropis*
691	Spiny Dogfish	*Squalus acanthias*
701	Longnose Skate	*Raja rhina*
700	Assorted Skates	Family Rajidae
NA	Assorted Flatfishes	Order Pleuronectiformes
	Pelagic Shelf Rockfish	
142	Black Rockfish	*Sebastes melanops*
154	Dusky Rockfish	*Sebastes ciliatus*
155	Yellowtail Rockfish	*Sebastes flavidus*
	Demersal Shelf Rockfish	
138	Copper Rockfish	*Sebastes caurinus*
145	Yelloweye Rockfish	*Sebastes ruberrimus*
146	Canary Rockfish	*Sebastes pinniger*
147	Quillback Rockfish	*Sebastes maliger*
148	Tiger Rockfish	*Sebastes nigrocinctus*
149	China Rockfish	*Sebastes nebulosus*
150	Rosethorn Rockfish	*Sebastes helvomaculatus*
	Slope Rockfish	
136	Northern Rockfish	*Sebastes polyspinis*
137	Bocaccio Rockfish	*Sebastes paucispinis*
141	Pacific Ocean Perch	*Sebastes alutus*
151	Rougheye Rockfish	*Sebastes aleutianus*
152	Shortraker Rockfish	*Sebastes borealis*
153	Redbanded Rockfish	*Sebastes babcocki*
157	Silvergray Rockfish	*Sebastes brevispinis*
158	Redstripe Rockfish	*Sebastes proriger*
159	Darkblotched Rockfish	*Sebastes crameri*
166	Sharpchin Rockfish	*Sebastes zacentrus*
NA	Splitnose Rockfish	*Sebastes diploproa*
NA	Harlequin Rockfish	*Sebastes variegatus*
143	Shortspine Thornyhead	*Sebastolobus alascanus*
200	Pacific Halibut	*Hippoglossus stenolepis*

Table 2. Emergency orders issued for commercial groundfish fisheries in the Cook Inlet Area during 2001.

Emergency Order Number	Effective Date	Explanation
2-GF-H-01-01	1/1/01	Opened the parallel Pacific cod fishery at 12:00 noon.
2-GF-H-02-01	2/26/01	Closed fishing with longline gear in the parallel Pacific cod fishery.
2-GF-H-03-01	3/4/01	Closed the parallel Pacific cod fishery and opened the state waters season for Pacific cod at 12:00 noon March 5.
2-GF-H-04-01	7/21/01	Closed the sablefish fishery and set no retention as bycatch.
2-GF-H-05-01	8/29/01	Closed the directed rockfish fishery, set a 20% bycatch retention for rockfish to directed lingcod fishing.
2-GF-H-06-01	10/22/01	Closed the lingcod fishery and set no retention as bycatch.

Table 3. Landings and exvessel values of Cook Inlet Area groundfish harvests, 1988-2001.

Year	Sablefish	Rockfish	Lingcod	Pacific Cod	Pollock	Other Species	Total
			1988 Harvest				
Round Wt (lb)	136,252	213,242	24,948	517,372	2,380	2,819	897,013
Price ($/lb)	$1.02	$0.12	$0.22	$0.21	$0.08	$0.21	
Value	$139,421	$26,307	$5,487	$107,970	$193	$587	$279,965
			1989 Harvest				
Round Wt (lb)	2,996	81,042	2,894	36,846	250	234	124,262
Price ($/lb)	$0.71	$0.07	$0.37	$0.07	$0.00	$0.15	
Value	$2,116	$5,662	$1,058	$2,587	$0	$34	$11,457
			1990 Harvest				
Round Wt (lb)	8,480	30,580	6,769	378,799	61,817	2,309	488,754
Price ($/lb)	$0.55	$0.29	$0.36	$0.13	$0.07	$0.03	
Value	$4,631	$8,930	$2,432	$49,851	$4,441	$65	$70,350
			1991 Harvest				
Round Wt (lb)	103,597	223,795	62,183	1,916,636	5,698	34,649	2,346,558
Price ($/lb)	$0.48	$0.20	$0.24	$0.27	$0.09	$0.33	
Value	$49,533	$44,971	$15,134	$513,991	$534	$11,556	$635,719
			1992 Harvest				
Round Wt (lb)	126,852	357,626	42,218	5,435,932	949	8,799	5,972,376
Price ($/lb)	$0.69	$0.25	$0.22	$0.23	$0.05	$0.20	
Value	$87,269	$89,927	$9,434	$1,250,924	$45	$1,732	$1,439,331
			1993 Harvest				
Round Wt (lb)	95,016	189,396	87,370	3,654,838	149,875	14,489	4,190,984
Price ($/lb)	$0.87	$0.32	$0.43	$0.24	$0.09	$0.46	
Value	$83,002	$59,947	$37,498	$880,826	$13,007	$6,636	$1,080,916
			1994 Harvest				
Round Wt (lb)	45,008	401,964	56,836	2,685,389	237,429	18,201	3,444,827
Price ($/lb)	$1.38	$0.42	$0.38	$0.19	$0.00	$0.31	
Value	$62,097	$168,348	$21,690	$511,595	$0	$5,585	$769,315

Table 3. (page 2 of 2)

Year	Sablefish	Rockfish	Lingcod	Pacific Cod	Pollock	Other Species	Total
1995 Harvest							
Round Wt (lb)	22,551	501,680	77,176	4,403,644	1,445	7,854	5,014,350
Price ($/lb)	$2.06	$0.58	$0.46	$0.24	$0.00	$0.72	
Value	$46,489	$291,247	$35,865	$1,045,991	$3	$5,683	$1,425,278
1996 Harvest							
Round Wt (lb)	81,067	191,087	59,296	4,630,742	1,940,506	204,735	7,107,433
Price ($/lb)	$1.94	$0.58	$0.52	$0.24	$0.09	$0.07	
Value	$157,502	$111,450	$30,951	$1,105,026	$171,700	$14,298	$1,590,927
1997 Harvest							
Round Wt (lb)	125,349	217,364	32,147	4,112,154	3,870,099	104,010	8,461,123
Price ($/lb)	$2.33	$0.59	$0.47	$0.27	$0.09	$0.21	
Value	$292,635	$128,461	$15,135	$1,105,001	$344,807	$21,958	$1,907,997
1998 Harvest							
Round Wt (lb)	69,689	76,649	41,239	3,413,622	9,682,978	150,417	13,434,633
Price ($/lb)	$1.43	$0.53	$0.47	$0.24	$0.08	$0.10	
Value	$99,800	$40,816	$19,368	$810,160	$744,006	$15,254	$1,729,404
1999 Harvest							
Round Wt (lb)	76,741	87,652	28,162	4,681,310	2,983,234	140,897	7,997,995
Price ($/lb)	$1.52	$0.58	$0.50	$0.37	$0.09	$0.07	
Value	$116,481	$50,499	$13,981	$1,724,949	$262,032	$9,662	$2,177,604
2000 Harvest							
Round Wt (lb)	103,662	158,572	33,517	2,719,984	448	25,488	3,041,631
Price ($/lb)	$2.04	$0.49	$0.58	$0.41	$0.08	$0.49	
Value	$211,022	$77,010	$19,395	$1,105,020	$37	$12,479	$1,424,963
2001 Harvest [a/]							
Round Wt (lb)	132,593	114,131	25,353	1,409,404	3,129	14,361	1,698,971
Price ($/lb)	$1.76	$0.40	$0.50	$0.38	$0.07	$0.50	
Value	$233,933	$45,754	$12,767	$542,163	$206	$7,239	$842,055

[a/] Preliminary data reported through October 1, 2001.

Table 4. Annual harvest and effort from the commercial sablefish fishery in the Cook Inlet Area, 1988–2001.

Year	Vessels	Landings	Commercial Harvest	ADF&G Survey[a/]	Total Harvest	GHL[b/]	CPUE (lb/landing)
			Round Weight (lb)				
1988	37	87	136,252		136,252		1,566
1989	4	5	2,996		2,996		599
1990	22	25	8,480		8,480		339
1991	25	33	103,597		103,597		3,139
1992	79	105	126,852		126,852		1,208
1993	36	52	95,016		95,016		1,827
1994	39	57	45,008		45,008		790
1995	33	45	22,551		22,551		501
1996	25	80	81,067		81,067	32,000-172,000	1,013
1997	39	98	125,349		125,349	72,000	1,279
1998	29	57	69,689		69,689	72,000	1,223
1999	23	40	73,695	3,046	76,741	63,400	1,842
2000	16	32	102,639	1,022	103,661	67,000	3,207
2001[c/]	21	33	132,593		132,593	67,000	4,018

[a/] Sablefish caught during the longline assessment survey and sold to defray survey costs.
[b/] Prior to the implementation of the federal IFQ program, sablefish seasons were set to coincide with federal sablefish seasons and an annual state water GHL was not established.
[c/] Preliminary data through October 1, 2001.

Table 5. Unweighted catch abundance during longline surveys in the North Gulf District, 1999-2000.

	Pacific Cod	Arrowtooth Flounder	Flathead Sole	Dover Sole	Thornyhead Rockfish	Rougheye Rockfish	Pacific Halibut	Wrymouth	Walleye Pollock	Spiny Dogfish	Pacific Sleeper Shark	Longnose Skate	Bathyraja Skate	Sablefish	Tanner Crab	Starfish	Defective Hooks	Unbaited Hoks	Baited Hooks
1999 Resurrection and Aialik Bays (n=9 stations)																			
Abundance	379	19	4	0	2	2	110	3	13	19	4	35	42	611	2	1	191	153	4,485
%Hooks	6.2%	0.3%	0.1%	0.0%	0.0%	0.0%	1.8%	0.0%	0.2%	0.3%	0.1%	0.6%	0.7%	10.1%	0.0%	0.0%	3.1%	2.5%	73.8%
% Catch	30.4%	1.5%	0.3%	0.0%	0.2%	0.2%	8.8%	0.2%	1.0%	1.5%	0.3%	2.8%	3.4%	49.0%	0.2%	0.1%	15.3%	12.3%	
Mean	42.1	2.1	0.4	0.0	0.2	0.2	12.2	0.3	1.4	2.1	0.4	3.9	4.7	67.9	0.2	0.1	21.2	17.0	498.3
Var	1,089.1	3.1	0.5	0.0	0.2	0.2	99.2	0.5	1.3	10.6	0.5	10.1	6.5	1314.1	0.4	0.1	228.9	116.8	1727.3
95% C.I.	25.4	1.4	0.6	0.0	0.3	0.3	7.7	0.5	0.9	2.5	0.6	2.4	2.0	27.9	0.5	0.3	11.6	8.3	31.9
2000 Nuka Bay (n=12 stations)																			
Abundance	466	169	2	1	0	36	58	1	48	17	7	33	48	199	2	8	287	350	6,368
%Hooks	5.8%	2.1%	0.0%	0.0%		0.4%	0.7%	0.0%	0.6%	0.2%	0.1%	0.4%	0.6%	2.5%	0.0%	0.1%	3.5%	4.3%	78.6%
% Catch	42.6%	15.4%	0.2%	0.1%	0.0%	3.3%	5.3%	0.1%	4.4%	1.6%	0.6%	3.0%	4.4%	18.2%	0.2%	0.7%	26.2%	32.0%	
Mean	38.8	14.1	0.2	0.1	0.0	3.0	4.8	0.1	4.0	1.4	0.6	2.8	4.0	16.6	0.2	0.7	23.9	29.2	530.7
Var	2,604.5	65.4	0.2	0.1		13.1	14.3	0.1	10.4	2.1	1.0	23.3	33.3	320.4	0.2	0.8	601.2	2,860.9	3,764.6
95% C.I.	32.4	5.1	0.2	0.2		2.3	2.4	0.2	2.0	0.9	0.6	3.1	3.7	11.4	0.2	0.6	15.6	34.0	39.0

Table 6. Annual harvest and effort by district from commercial rockfish fisheries in the Cook Inlet Area, including black rockfish from federal waters, 1988-2001.

Year[a/]	Vessels	Landings	Cook Inlet District	North Gulf District	Federal Waters	Total Harvest
			Round Weight (lb)			
1988	44	102	2,859	148,171	62,213	213,242
1989	12	30	0	22,7644	58298	81,042
1990	31	45	401	29,807	371	30,580
1991	60	160	270	222,968	557	223,795
1992	121	403	329	333,598	23,699	357,626
1993	86	296	2,641	68,177	118,579	189,396
1994	74	285	110	205,375	196,480	401,965
1995	121	415	4,190	269,995	227,494	501,679
1996	124	346	700	115,287	75,101	191,087
1997	131	377	3,269	179,763	34,332	217,364
1998	110	317	10	69,215	7,423	76,648
1999	95	290	0	86,007	1,645	87,652
2000	97	244	0	132,595	25,978	158,573
2001	73	151	38	106,982	7,110	114,130

[a/] Preliminary data through October 1, 2001.

Table 7. Annual commercial lingcod harvest and effort by gear type and recreational harvests from the Cook Inlet area and adjacent federal waters, 1988-2001

	Commercial Fishery Harvest and Effort							
			Jig/Troll	Longline	Other Gears	Commercial Total	Sport Harvest	Total Harvest
Year[a/]	Vessels	Landings	Round Weight (lb)					
1988	16	37	6,511	16,172	2,264	24,948	74,000	98,948
1989	10	20	399	2,495	0	2,894	82,000	84,894
1990	22	24	1,306	5,227	236	6,769	118,000	124,769
1991	31	96	57,691	1,666	2,827	62,184	122,000	184,184
1992	84	192	6,998	34,071	1,149	42,218	160,800	98,948
1993	18	65	86,724	646	0	87,370	85,500	84,894
1994	14	33	56,505	331	0	56,836	85,000	124,769
1995	43	75	72,489	4,101	586	77,176	73,880	184,184
1996	39	59	47,986	11,307	3	59,296	119,720	203,018
1997	34	49	17,572	14,375	200	32,147	106,200	172,870
1998	23	41	27,284	13,602	353	41,239	88,600	141,836
1999	41	69	10,741	15,809	1,612	28,162	100,680	151,056
2000	41	78	29,488	4,029	0	33,517	160,950	179,016
2001	30	65	17,391	7,905	57	25,353	NA	25,353[a/]

[a/] Preliminary data through October 1, 2001.

Table 8. Annual harvest and effort in the commercial parallel season fisheries for Pacific cod in the North Gulf and Cook Inlet Districts, 1988-2001.

	North Gulf District			Cook Inlet District			Pooled Districts		
Year[a/]	Vessels	Landings	Harvest (lb)	Vessels	Landings	Harvest (lb)	Vessels	Landings	Harvest (lb)
1988	28	81	303,695	38	138	213,677	59	218	517,372
1989	7	19	29,256	4	4	7,590	9	22	36,846
1990	19	27	158,654	34	102	220,145	52	129	378,799
1991	78	158	979,979	77	340	936,458	121	498	1,916,436
1992	153	617	4,650,941	50	269	784,991	188	886	5,435,932
1993	87	263	2,745,755	29	178	909,084	107	441	3,654,838
1994	51	159	1,482,445	30	246	1,202,944	73	405	2,685,389
1995	111	257	3,009,289	50	456	1,394,355	139	712	4,403,644
1996	92	302	3,793,559	24	286	837,183	104	586	4,630,742
1997	110	294	2,050,031	38	320	1,223,135	137	614	3,273,166
1998	92	310	2,121,956	27	265	564,428	115	575	2,686,384
1999	88	261	2,083,570	33	246	1,079,834	112	507	3,163,404
2000	81	223	1,040,732	31	221	529,465	102	442	1,570,196
2001	65	116	267,154	24	128	344,741	80	242	611,895

[a/] Preliminary data through October 1, 2001.

Table 9. Annual commercial harvest and effort for Pacific cod fisheries in the state waters season (A) and pooled among parallel and state waters seasons (B) of the North Gulf and Cook Inlet Districts, 1988-2001.

A. State-Waters Season

	North Gulf District			Cook Inlet District			Pooled Districts
Year[a/]	Vessels	Landings	Harvest (lb)	Vessels	Landings	Harvest (lb)	Harvest (lb)
1997	29	83	291,565	35	311	547,423	838,987
1998	28	97	164,764	20	256	562,514	727,278
1999	20	58	359,511	23	324	1,158,396	1,517,907
2000	7	11	19,817	19	367	1,129,971	1,149,788
2001	5	15	60,310	9	184	737,199	797,509

(B). Pooled Seasons

	North Gulf District			Cook Inlet District			Pooled Districts
Year[a/]	Vessels	Landings	Harvest (lb)	Vessels	Landings	Harvest (lb)	Harvest (lb)
1988	28	81	303,695	38	138	213,677	517,372
1989	7	19	29,256	4	4	7,590	36,846
1990	19	27	158,654	34	102	220,145	378,799
1991	79	159	980,179	77	340	936,458	1,916,636
1992	155	623	4,656,230	50	269	785,191	5,441,421
1993	89	265	2,752,451	29	178	909,294	3,661,744
1994	52	161	1,482,618	30	246	1,202,944	2,685,562
1995	112	259	3,014,296	50	456	1,394,355	4,408,651
1996	94	305	3,807,762	24	286	837,183	4,644,945
1997	124	377	2,341,596	66	631	1,770,557	4,112,154
1998	116	407	2,286,720	40	521	1,126,942	3,413,662
1999	104	319	2,443,081	51	570	2,238,230	4,681,310
2000	86	234	1,060,549	39	588	1,659,435	2,719,984
2001	70	131	327,464	27	312	1,081,940	1,409,404

[a/] Preliminary data through October 1, 2001.

Table 10. Annual commercial pollock harvest and effort in the Cook Inlet Area, 1988-2001.

Year[a/]	Vessels	Landings	Harvest (lb)	CPUE[b/] (lb/landing)
1988	6	14	2,380	170
1989	Confidential	3	250	83
1990	18	35	61,817	1,766
1991	3	3	5,698	1,899
1992	34	43	949	22
1993	33	47	149,875	3,189
1994	24	39	237,429	6,088
1995	22	33	1,445	44
1996	16	33	1,940,506	58,803
1997	25	59	3,870,099	65,595
1998	18	74	9,682,978	130,851
1999	12	24	2,983,234	124,301
2000	4	4	448	112
2001	8	13	3,129	241

[a/] Preliminary data through October 1, 2001.
[b/] CPUE is catch per unit effort.

Table 11. Annual commercial harvest of other groundfish species from the Cook Inlet Area, 1988-2001.

Year[a/]	Vessels	Landings	Flatfish[b/]	Sharks[c/]	Skates	Other[d/]	Octopus	Squid	Total
					Round Weight (lb)				
1988	6	6	2,418	101	275	24			2,819
1989	3	3		234					234
1990	15	23	1,353	20		936			2,309
1991	21	43	31,866		2,321	40	422		34,649
1992	112	256	1,056	1,009	6,004	30	700		8,799
1993	68	180	4,560		2,967	501	6,461		14,489
1994	52	169	4,471	112	68		13,550		18,201
1995	38	95	283	100	180	6	7,285		7,854
1996	51	155	150,651	408	48,405	31	5,205	35	204,735
1997	43	196	51,929	394	22,006	561	25,148	3,972	104,010
1998	47	197	47,874	268	62,381		12,914	26,980	150,417
1999	23	138	86,410	6,594	2,679	89	22,052	23,073	140,897
2000	21	147	274		66	4	25,104		25,448
2001[d]	12	79	31		2,709	193	14,137		17,070

[a/] Preliminary data reported through October 1, 2001.
[b/] Flatfish includes general flatfish, flounders, and soles.
[c/] Sharks include spiny dogfish, salmon, Pacific sleeper, and unspecified sharks.
[d/] Other includes general groundfish, misc. unidentified fish, eel, greenling, and sculpin.

Table 12. Unweighted catch abundance and mean catch rates in the Prince William Sound longline survey, 1996-2000.

	Sablefish	Pacific Cod	Pollock	Pacific Halibut	Arrowtooth Flounder	Demersal Rockfish	Slope Rockfish	Skates	Salmon Shark	Spiny Dogfish	Sleeper Shark	Other	Hooks Baited	Hooks Ineffective	Hooks Unbaited	Total Hooks
1996 - Northwest PWS (n = 31 stations)																
Abundance	1,652	239	129	841	70	4	109	451	1	27	35	9	15,674	369	1,360	20,970
% of Hooks	7.9%	1.1%	0.6%	4.0%	0.3%	0.0%	0.5%	2.2%	0.0%	0.1%	0.2%	0.0%	74.7%	1.8%	6.5%	100.0%
% of Catch	46.3%	6.7%	3.6%	23.6%	2.0%	0.1%	3.1%	12.6%	0.0%	0.8%	1.0%	0.3%				
Fish/Set	53.3	7.7	4.2	27.1	2.3	0.1	3.5	14.5	0.0	0.9	1.1	0.3				
1997 - Northwest and Southwest PWS (n = 34 stations)																
Abundance	1,559	260	138	945	104	3	92	339	0	91	59	32	17,278	536	1,517	22,953
% of Hooks	6.8%	1.1%	0.6%	4.1%	0.5%	0.0%	0.4%	1.5%	0.0%	0.4%	0.0%	0.1%	75.3%	2.3%	6.6%	100.0%
% of Catch	43.0%	7.2%	3.8%	26.1%	2.9%	0.1%	2.5%	9.4%	0.0%	2.5%	1.6%	0.9%				
Fish/Set	45.9	7.6	4.1	27.8	3.1	0.1	2.7	10.0	0.0	2.7	1.7	0.9				
1998 - Northwest and Eastern PWS (n = 38 stations)																
Abundance	2,698	476	187	975	111	2	99	622	1	1,948	103	11	16,147	1,322	948	25,650
% of Hooks	10.5%	1.9%	0.7%	3.8%	0.4%	0.0%	0.4%	2.4%	0.0%	7.6%	0.4%	0.0%	63.0%	5.2%	3.7%	100.0%
% of Catch	37.3%	6.6%	2.6%	13.5%	1.5%	0.0%	1.4%	8.6%	0.0%	26.9%	1.4%	0.2%				
Fish/Set	71.0	12.5	4.9	25.7	2.9	0.1	2.6	16.4	0.0	51.3	2.7	0.3				
1999 - Northwest and Southwest PWS (n = 30 stations)																
Abundance	1,833	169	107	668	83	0	64	179	0	51	128	7	14,735	1,092	1,134	20,250
% of Hooks	9.1%	0.8%	0.5%	3.3%	0.4%	0.0%	0.3%	0.9%	0.0%	0.3%	0.6%	0.0%	72.8%	5.4%	5.6%	100.0%
% of Catch	55.7%	5.1%	3.3%	20.3%	2.5%	0.0%	1.9%	5.4%	0.0%	1.6%	3.9%	0.2%				
Fish/Set	61.1	5.6	3.6	22.3	2.8	0.0	2.1	6.0	0.0	1.7	4.3	0.2				
2000 - Northwest and Eastern PWS (n = 36 stations)																
Abundance	3,101	146	47	513	50	0	80	432	0	47	92	4	17,666	1,543	579	24,300
% of Hooks	12.8%	0.6%	0.2%	2.1%	0.2%	0.0%	0.3%	1.8%	0.0%	0.2%	0.4%	0.0%	72.7%	6.3%	2.4%	100.0%
% of Catch	68.7%	3.2%	1.0%	11.4%	1.1%	0.0%	1.8%	9.6%	0.0%	1.0%	2.0%	0.1%				
Fish/Set	86.1	4.1	1.3	14.3	1.4	0.0	2.2	12.0	0.0	1.3	2.6	0.1				
Totals Among Years																
Abundance	10,843	1,290	608	3,942	418	9	444	2,023	2	2,164	417	63	81,500	4,862	5,538	114,123
% of Hooks	9.5%	1.1%	0.5%	3.5%	0.4%	0.0%	0.4%	1.8%	0.0%	1.9%	0.4%	0.1%	71.4%	4.3%	4.9%	100.0%
% of Catch	48.8%	5.8%	2.7%	17.7%	1.9%	0.0%	2.0%	9.1%	0.0%	9.7%	1.9%	0.3%				
Fish/Set	64.2	7.6	3.6	23.3	2.5	0.1	2.6	12.0	0.0	12.8	2.5	0.4				

Table 13. Reported at-sea discards from Cook Inlet Area groundfish fisheries, 1989-2001.

Year	Sablefish	Rockfish	Lingcod	Pacific Cod	Pollock	Flatfish	Sharks	Skates	Other	Octopus	Squid	Total
	Round Weight (lb)											
1988												0
1989		18										18
1990	10		1,500			2,899						4,409
1991		27	1,528	200	3,830	60		400	1,610			7,655
1992	57	1,251	4,235	5,489	2,926	19,125	7,948	64,997	448	27		106,503
1993	13		1,180	6,906	4,470	13,396	10,704	43,607	990	329	2	81,597
1994	54	76	1,835	173	832	4,284	1,825	34,850	205			44,134
1995	1,000	366	2,950	5,007	1,550	4,387	19,531	34,486				69,277
1996	8,010	5,490	1	14,203	3,153	88,357		12,369	3,693	2,894		138,170
1997					25,000		500	300		10		25,810
1998	4,895	3,672		396	10,451	89,224	4,994	6,090	4,350		1,828	125,900
1999			68		137	241	864	959	1,165		690	4,124
2000	2,448	836	4,746	17,194	167	1,701	1,631	5,454	76			34,253
2001	1,510		7,549	1,253	1	733		2,709	90	113		13,958
	Among Years 1988-2000											
Total	16,487	11,736	18,043	49,568	52,516	223,674	47,997	203,512	12,537	3,260	2,520	641,850
Mean	2,061	1,467	2,005	6,196	5,252	22,367	6,000	20,351	1,567	815	840	49,373
% of Total	3%	2%	3%	8%	8%	35%	7%	32%	2%	1%	<1%	100%

[a/] Preliminary data through October 1, 2001.

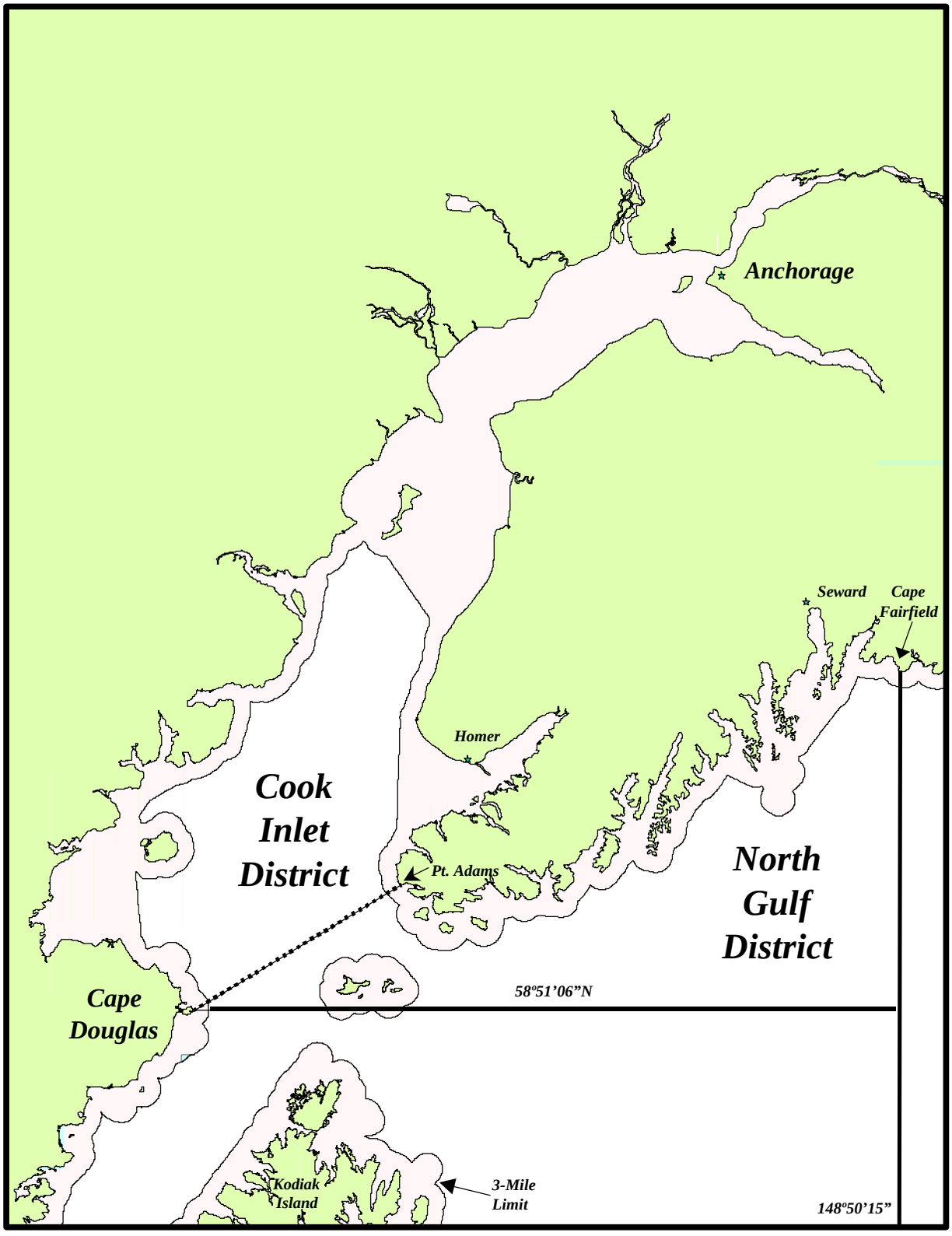

Figure 1. Commercial groundfish districts of the Cook Inlet Area.

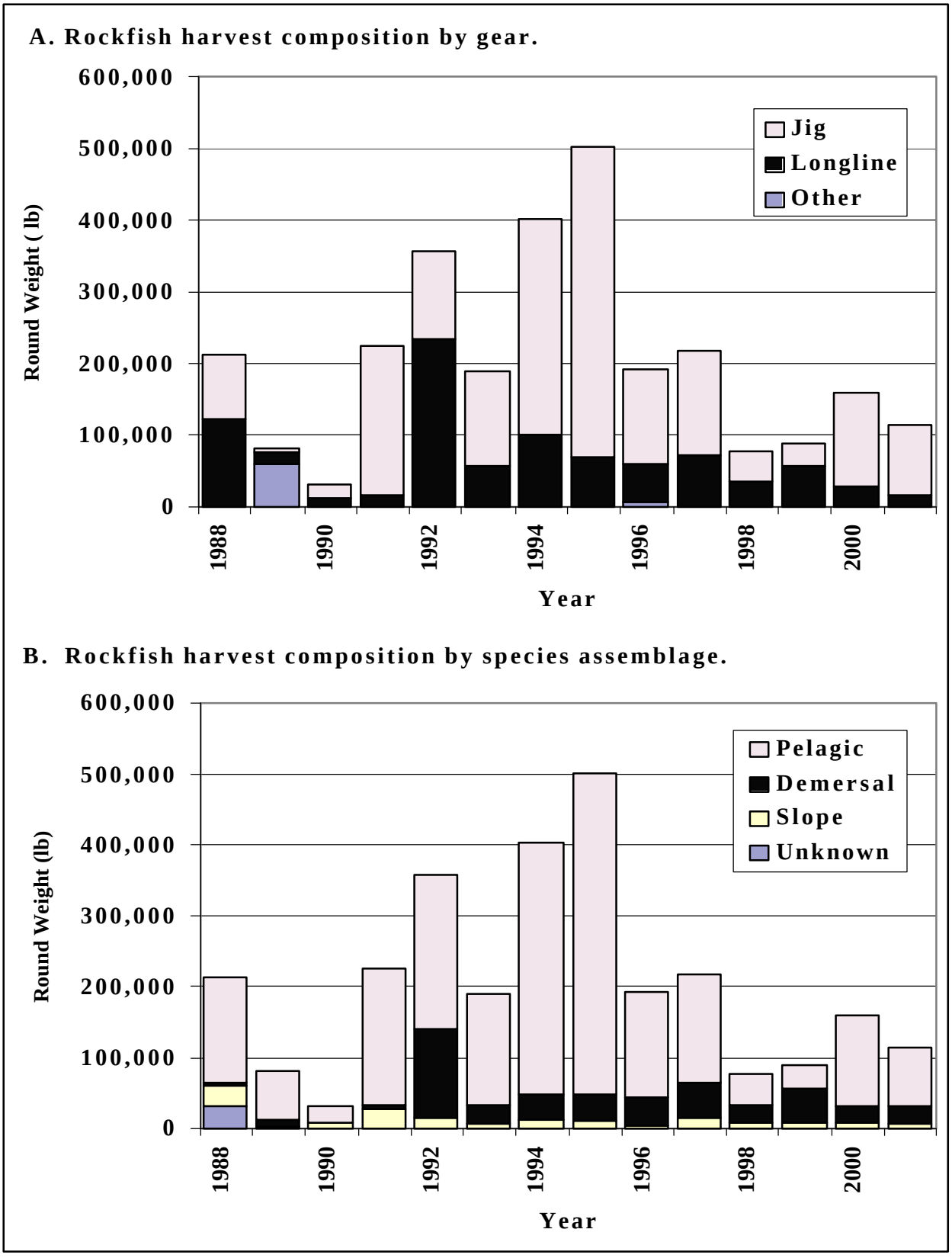

Figure 2. Commercial rockfish harvest contribution by gear type and rockfish species assemblage, 1988-2001.

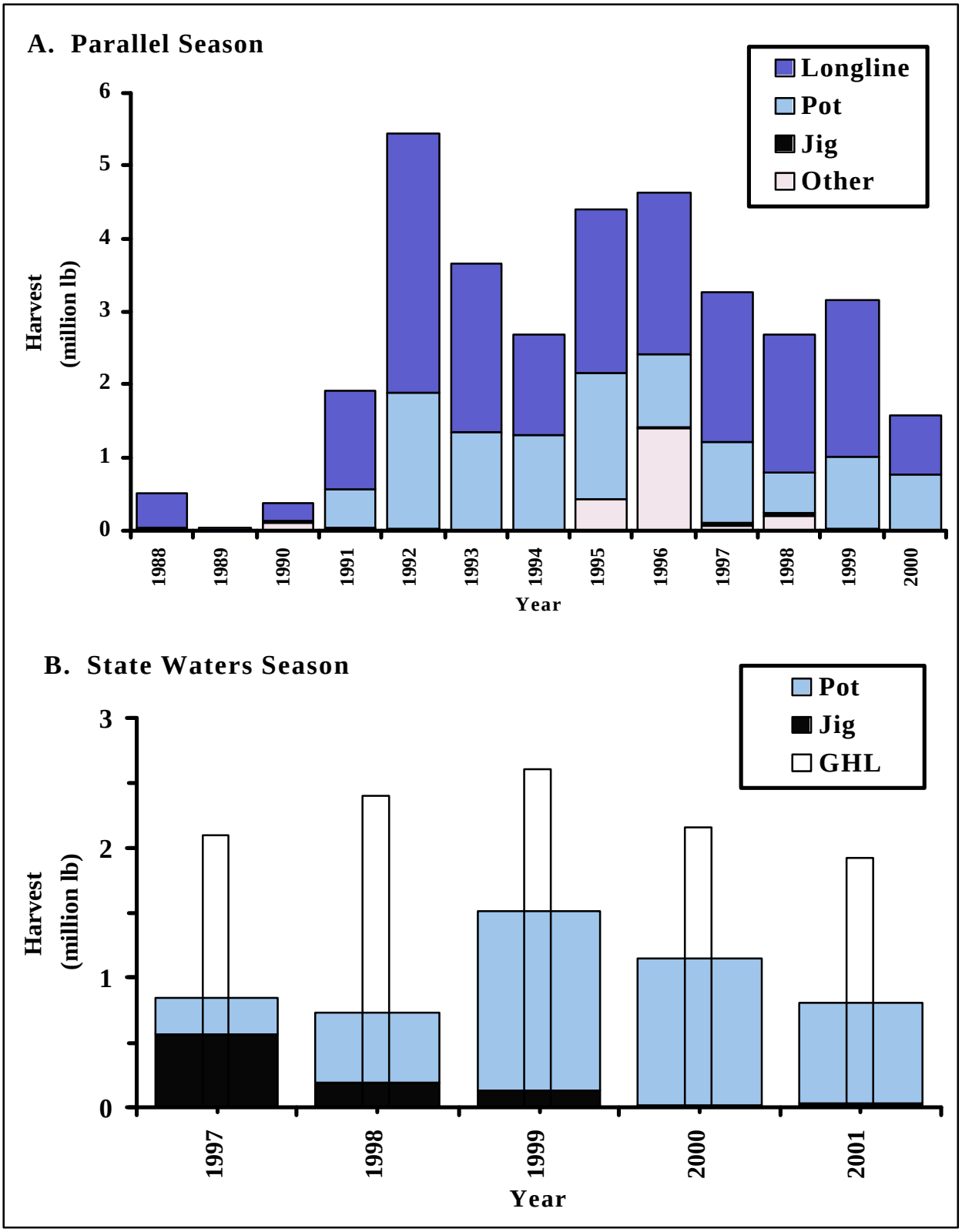

Figure 3. Pacific cod catch by gear type in the Cook Inlet Area parallel (A) and state waters (B) seasons, 1988-2001.